

REMARKS

Reference to the specification is made using the paragraph numbering of the published US Application, 2007/0168135.

Claims 12-66 are cancelled. Accordingly Claims 1-11 are pending in the current application.

Claim 1 has been amended to recite sorting the results of step (d) by increasing or decreasing significance; and displaying the results to a user. Amendment of claim 1 is supported by the specification as filed, e.g., at paragraph 0087 and 0094.

1. Rejection under 35 USC §101

The claims stand rejected under 35 USC §101 as lacking patentable subject matter. Applicants respectfully traverse this rejection.

(a) Transformation of Matter

The Office Action, citing *In re Bilski*, alleges that the claimed method does not recite “a physical transformation of matter” and therefore “the method must be tied to another category of invention to be patentable subject matter”.

However, while *In re Bilski* (88 USPQ2d 1385, CAFC 2008) discusses the transformation of “a particular article to a specified different state or thing” (page 1391), it does not require a physical transformation of matter as stated in the present Office Action. The *Bilski* decision states at page 1396:

A claimed process is patent-eligible if it transforms an article into a different state or thing. This transformation must be central to the purpose of the claimed process. But the main aspect of the transformation test that requires clarification here is what sorts of things constitute “articles” such that their transformation is sufficient to impart patent-eligibility under §101. It is virtually self-evident that a process for a chemical or physical transformation of *physical objects or substances* is patent-eligible subject matter.

However, the *Bilski* court does not stop there, but states (citing *In re Abele*, 684 F.2d 902, 214 USPQ 682, CCPA 1982):

(W)e held one of Abele's dependent claims to be drawn to patent-eligible subject matter where it specified that “said data is X-ray attenuation data produced in a two dimensional field by a computed tomography scanner.” *Abele*, 684 F.2d at 908-09. This data clearly represented physical and tangible objects, namely the structure of

bones, organs, and other body tissues. Thus, the transformation of that raw data into a particular visual depiction of a physical object on a display was sufficient to render that more narrowly-claimed process patent-eligible.

We further note for clarity that the electronic transformation of the data itself into a visual depiction in *Abele* was sufficient; the claim was not required to involve any transformation of the underlying physical object that the data represented. We believe this is faithful to the concern the Supreme Court articulated as the basis for the machine-or-transformation test, namely the prevention of pre-emption of fundamental principles. So long as the claimed process is limited to a practical application of a fundamental principle to transform specific data, and the claim is limited to a visual depiction that represents specific physical objects or substances, there is no danger that the scope of the claim would wholly pre-empt all uses of the principle. *Bilski* at page 1397, underlining added.

Present claim 1 recites “inputting to a computer a query set” describing one or more candidate biomolecules. As stated at paragraph 0047 of the specification:

(T)he term "query set" means any item or group of items arranged in such a way as to allow for comparison to a target database. By way of example and not limitation, a query set can include a nucleic acid sequence, an amino acid sequence, or a combination thereof. Query sets can be produced by manual grouping of items. In another example, a query set can be produced by techniques including, but not limited to text mining of sequence databases and literature, homology searches, annotation keyword searches, or any other technique that generates a group of items that are believed to share a common property. Query sets can comprise results from one or more biological experiments, for example as raw data or as a product of statistical or other data analyses.

Applicants submit that this data clearly represents physical and tangible objects, namely the candidate biomolecule. The present method transforms that data; Claim 1 has been amended to further recite sorting and displaying the results of the statistical analysis such that relationships between the underlying physical objects can be identified. Applicants submit that this is sufficient to confer patent eligibility, as discussed by the *Bilski* court, above. The present claim need not involve “any transformation of the underlying physical object that the data represented” (*Id.*).

(b) Useful, tangible and concrete result

The Office Action further states that the present claims “do not produce a useful, concrete and tangible result”, as “the last step is one of analyzing, which indicates an ongoing process (and) ... does not indicate that a result has necessarily been produced.”

Applicants note that previously the final step of claim 1 recited statistically analyzing each match, where the presence of a statistically significant match identified a relationship between the query set and a bucket of the target database. Applicants submit that the last step was the identification of a relationship, not the analysis itself. The identification of such a relationship between the candidate biomolecule and a reference biomolecule is a useful result. Claim 1 has been amended, above, to more clearly recite this aspect of the invention, and to recite the sorting and displaying of the results. These amendments are supported by the specification as filed, e.g., at paragraphs 0087 and 0094.

In view of the above, withdrawal of the present rejection is requested.

CONCLUSION

Should any outstanding issues remain, the Examiner is encouraged to contact Applicants' undersigned representative.

Respectfully submitted:

/Virginia G. Campen/
Virginia G. Campen
Attorney for Applicants
Reg. No. 37,092

Date: 13 January 2009
GlaxoSmithKline Inc.
Corporate Intellectual Property
Five Moore Drive, P.O. Box 13398
Research Triangle Park, NC 27709
Tel. (919) 483-1012
Fax: (919) 483-7988